

# Summary of Regulatory Requirements for a Municipal Solid Waste, Ash and Construction and Demolition Waste Landfill (Co-disposal)

October 4, 2021

The following is a summary of regulatory requirements applicable to owning, operating and maintaining a Municipal Solid Waste (MSW) disposal facility in Hawai'i. The requirements are taken from Hawai'i Administrative Rules, Title 11 – Department of Health, Chapter 58.1 – Solid Waste Management Control (Title 11), and Hawai'i Legislation (State Bill SB2386) that became law on September 15, 2020 (a.k.a., Act 073).

Regulatory requirements pertaining to disposal of ash from combustion or incineration of MSW and Construction and Demolition (C&D) waste are also contained in Title 11. Ash is listed as a Special Waste in Title 11, which requires disposal in a monofill meeting the same regulatory requirements as a MSW disposal facility. The siting and design criteria for a C&D waste disposal facility are less restrictive than a MSW disposal facility if permitted, constructed and operated solely for disposal of C&D waste. The City intends to co-dispose C&D waste with MSW and ash, which will require the higher regulatory standards for a MSW/ash disposal facility to be met. This summary of regulatory requirements is not meant to be all inclusive, but to outline the significant regulatory requirements in a heavily regulated industry.

Definitions of landfill categories and waste types used in this summary are listed at the end of the table.

<b>Regulation Topic</b>	<b>MSW/Ash/C&amp;D Waste (landfill)</b>
<b>1. Site Analysis</b>	
<b>Act 73</b>	
<b>Location Prohibition</b>	Prohibits any waste or disposal facility from being located in a conservation district except in emergency circumstances to mitigate significant risks to public safety and health.
<b>Location Prohibition</b>	Requires no less than a one-half mile buffer zone around residences, schools, and hospitals for the construction, modification, or expansion of a waste or disposal facility.
<b>Title 11</b>	
<b>Airport Safety</b>	Owners/Operators of a new landfill that is located within 10,000 feet (3,048 meters) of any airport runway end used by turbojet aircraft or within 5,000 feet (1,524 meters) of any airport runway end used by only piston-type aircraft must demonstrate that the units are designed and operated so that the landfill does not pose a bird hazard to aircraft.
<b>Floodplains</b>	Owners/Operators of a new landfill located in 100 year floodplains must demonstrate that the landfill will not restrict the flow of a 100 year flood, reduce the temporary water storage capacity of the floodplain, or result in washout of solid waste so as to pose a hazard to human health and the environment.
<b>Wetlands</b>	A new landfill shall not be located in wetlands, unless the Owners/Operators can demonstrate it will not cause violations to

	applicable state water standards and other federal standards, including the Clean Water and Endangered Species Acts.
<b>Fault Areas</b>	A new landfill shall not be located within 200 feet (sixty meters) of a fault that has had displacement in Holocene time unless the Owners/Operators can demonstrate that an alternative setback distance of less than 200 feet (sixty meters) will prevent damage to the structural integrity of the landfill and will be protective of human health and the environment.
<b>Seismic Impact Zones</b>	A new landfill shall not be located in seismic impact zones, unless the Owners/Operators can demonstrate that all containment structures, including liners, leachate collection systems, and surface water control systems, are designed to resist the maximum horizontal acceleration in lithified earth material for the site.
<b>Unstable Areas</b>	Owners/Operators of a new landfill located in an unstable area must demonstrate that engineering measures have been incorporated into the landfill's design to ensure that the integrity of the structural components of the landfill will not be disrupted.
<b>Tidal Wave (Tsunami) Zone</b>	A new landfill shall not be located in possible tsunami inundation areas.
<b>2. Design Criteria</b>	
<b>Title 11</b>	
<b>Groundwater Protection</b>	Owners/Operators of a new landfill must ensure specific water quality constituents and concentration values will not be exceeded in the uppermost aquifer at the relative point of compliance (no more than 150 meters from the disposal boundary).
<b>Leachate Collection System</b>	The landfill's leachate collection and control system must be designed and constructed to maintain less than 30 centimeters depth of leachate over the bottom liner system.
<b>Bottom Liner Requirements</b>	<p>The design of the landfill composite bottom liner system shall consist of an upper and lower component:</p> <ol style="list-style-type: none"> <li>1.) The upper component must consist of a minimum 30-mil flexible membrane liner (FML) with a hydraulic conductivity of <math>1 \times 10^{-7}</math> cm/sec. FML components consisting of HDPE shall be at least 60-mil thick.</li> <li>2.) The lower component must consist of at least a two-foot layer of compacted soil with a hydraulic conductivity of less than <math>1 \times 10^{-7}</math> cm/sec.</li> </ol>
<b>Closure Cover Requirements</b>	<p>The design of the landfill composite closure cover system shall consist of three components:</p> <ol style="list-style-type: none"> <li>3.) An infiltration layer with a permeability less than or equal to the permeability of the bottom liner system or a permeability no greater than <math>1 \times 10^{-5}</math> cm/sec, whichever is less.</li> <li>4.) An infiltration layer of a minimum 18 inches of earthen material.</li> <li>5.) An erosion layer of a minimum 6 inches of earthen material capable of sustaining plant growth.</li> </ol>

<b>3. Operating Criteria</b>	
<b>Title 11</b>	
<b>Exclusion of Hazardous Waste</b>	Owners/Operators of a landfill must implement a program at the facility for detecting and preventing the disposal of regulated hazardous wastes.
<b>Disease Vector Control</b>	Owners/Operators of a landfill must prevent or control on-site populations of disease vectors using techniques appropriate for the protection of human health and the environment.
<b>Explosive Gases Control</b>	Owners/Operators of a landfill must implement a routine methane monitoring program. A gas control plan must be implemented if certain gas thresholds are exceeded, including installation of a landfill gas collection and control system (GCCS). Installation and operation of a GCCS are regulated by the U.S. EPA under New Source Performance Standards (NSPS) and National Emissions Standards for Hazardous Air Pollutants (NESHAP).
<b>Air Criteria</b>	Owners/Operators of a landfill must ensure that the units do not violate any applicable requirements developed under the Hawaii State Implementation Plan (SIP) approved by the U.S. EPA Administrator pursuant Section 10 of the Clean Air Act, including NESHAP Open burning of solid waste, except for debris from emergency cleanup operations, is prohibited.
<b>Access Requirements</b>	Owners/Operators of a landfill must control public access and prevent unauthorized vehicular traffic and illegal dumping of wastes.
<b>Run-on or Run-off Control Systems</b>	Owners/Operators of a landfill must design, construct and maintain run-on and run-off control systems for minimum peak storm events.
<b>Surface Water Requirements</b>	Owners/Operators of a landfill shall not cause a discharge of pollutants into waters of the U.S., including wetlands, that violates any requirements of the Clean Water Act and National Pollutant Discharge Elimination System (NPDES) requirements.
<b>Liquids Restrictions</b>	Owners/Operators of a landfill shall not place bulk or non-containerized liquid waste in the landfill.
<b>Groundwater Protection</b>	Owners/Operators of a landfill must comply with groundwater monitoring requirements, including installation of groundwater monitoring wells and routine sampling. Assessment and remedial action plans must be implemented if levels of constituents established by the state are exceeded.
<b>Post-Closure Care</b>	Owners/Operators of a landfill must monitor and maintain a closed landfill for a minimum 30 years after closure.
<b>Closure and Post-Closure Care Financial Assurance</b>	Owners/Operators of a landfill must maintain financial assurance mechanism for the maximum costs to close any active area of the landfill and provide post-closure care for the 30 year period. The financial assurance mechanism must be transferable to the state.

**Definitions:**

"Ash" means the residue including any air pollution flue dust or bottom ash from combustion or the incineration of material including solid wastes.

"Construction and demolition waste" means solid waste (largely inert waste) resulting from the demolition or razing of buildings, roads, or other structures; such as concrete, rock, brick, bituminous concrete, wood, and masonry, composition roofing and roofing paper, steel, plaster, and minor amounts of other metals, such as copper. Construction and demolition waste does not include cleanup materials contaminated with hazardous substances, friable asbestos, waste paints, solvents, sealers, adhesives, or similar materials.

"Disposal facility" means a solid waste management facility or part of one at which solid waste is intentionally placed into or on any land or water, and at which solid waste will remain after closure.

"Leachate" means water or other liquid that has percolated, passed through, or emerged from solid waste or gases therefrom, and contains dissolved, soluble, suspended, or miscible materials removed from the waste.

"Monofill" means a method of solid waste disposal that involves landfilling of one waste type or wastes having a very similar characteristics in a segregated area which is physically separated from dissimilar or incompatible wastes.

"Municipal solid waste landfill "MSWLF unit" means a discrete area of land or an excavation that receives household waste, and that is not a land application unit, surface impoundment, injection well, or waste pile, as those terms are defined under 40 CFR section 257.2. A MSWLF unit may also receive other types of RCRA subtitle D wastes, such as commercial solid waste, nonhazardous sludge, conditionally exempt small quantity generator waste, and industrial solid waste. The landfill may be publicly or privately owned. A MSWLF unit may be a new MSWLF unit, an existing MSWLF unit, or a lateral expansion.

"Solid waste" or "waste" means garbage, refuse, and other discarded materials, including solid, liquid, semi-solid, or contained gaseous materials resulting from industrial, commercial, mining, and agricultural operations, sludge from waste treatment plants and water supply treatment plants, and residues from air pollution control facilities and community activities, but does not include solid or dissolved materials in domestic sewage or other substances in water sources such as silt, dissolved or suspended solids in industrial waste water effluents, dissolved materials in irrigation return flows, or other common water pollutants, and source, special nuclear, or by-product material as defined by the federal Atomic Energy Act of 1954, as amended (68 Stat. 923).

"Special wastes" means any solid waste which, because of its source or physical, chemical, or biological characteristics, require special consideration for its proper processing or disposal, or both. This term includes, but is not limited to, asbestos, used oil, lead acid batteries, municipal waste combustion ash, sewage sludge that is non-hazardous, medical wastes, tires, white goods, and derelict vehicles.